

**ABSTRACT OF THE DISCLOSURE**

Disclosed is an improved alpha calcium sulfate hemihydrate. Methods of producing an improved powdered calcium sulfate hemihydrate ( $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$ ) [alpha-type] compound are disclosed, at least one method including forming calcium sulfate dihydrate ( $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ ) into a  
5 briquette under high pressure, calcining the briquette to transform the calcium sulfate dihydrate to calcium sulfate hemihydrate [alpha-type], drying the calcium sulfate hemihydrate [alpha-type] briquette, and optionally grinding the briquette. Also disclosed are methods of producing an improved gypsum plaster including producing the disclosed powdered calcium sulfate hemihydrate [alpha-type] and mixing the powdered calcium sulfate hemihydrate [alpha-type]  
10 with water.